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OIPE JC109 JUL 0 6 2004 PATENT & TRADEMARK OFFICE

HT-03-016

June 30, 2004

To: Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Fr: George O. Saile, Reg. No. 19,572
28 Davis Avenue
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Subject: Serial No. 10/820,391 04/08/04

Cheng T. Horng et al.

A NOVEL OXIDATION STRUCTURE/METHOD TO FABRICATE A HIGH-PERFORMANCE MAGNETIC TUNNELING JUNCTION MRAM

INFORMATION DISCLOSURE STATEMENT

Enclosed is Form PTO-1449, Information Disclosure Citation In An Application.

The following Patents and/or Publications are submitted to comply with the duty of disclosure under CFR 1.97-1.99 and 37 CFR 1.56.

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 450, Alexandria, VA 22313-1450, on July 2, 2004.

George O. Saile, Reg. No. 19572

Signature/Date George O. Saile 7/2/04

U.S. Patent Application HT-02-019, filed 02/20/03, Serial No. 10/371,841 now issued as U.S. Patent 6,703,654 to Horng et al., "Bottom Electrode for Making a Magnetic Tunneling Junction (MTJ)," discusses a method of fabricating a bottom electrode for magnetic tunneling junction (MTJ) devices.

U.S. Patent Application HT-02-032, filed 01/30/04, Serial No. 10/768,917 to Horng et al., "A Novel Oxidation Method to Fabricate Low Resistance TMR Read Head," discusses the use of magnetic tunnel junction (MTJ) configurations to form tunneling magnetic read heads (TMR) read heads.

U.S. Patent Application HT-03-006, filed 09/12/03, Serial No. 10/661,038 to Horng et al., "Process and Structure to Fabricate Spin Valve Heads for Ultra-High Recording Density Application," discloses the fabrication of a giant magneto-resistive (GMR) magnetic read head.

U.S. Patent Application HT-03-022, filed 05/12/04, Serial No. 10/844,171 to Horng et al., "A Novel Structure/ Method to Fabricate a High-Performance Magnetic Tunneling Junction MRAM," discusses the use of a simple fabrication process that leads to a smooth bottom electrode and superior performance properties in MTJ MRAMs.

U.S. Patent Application HT-03-025/031, filed 05/19/04, Serial No. 10/849,310 to Horng et al., "A Novel Buffer (Seed) Layer for Making a High-Performance Magnetic Tunneling Junction MRAM," discusses the use of a novel seed layer that allows the formation of a junction layer of superior physical properties.

U.S. Patent 5,640,343 to Gallagher et al., "Magnetic Memory Array Using Magnetic Tunnel Junction Devices in the Memory Cells," discloses an array of MTJ elements connected to a diode in series, the whole comprising an MRAM array.

A discussion of several oxidation methods can be found in Y. Ando et al., "Growth mechanisms of thin insulating layer in ferromagnetic tunnel junctions prepared using various oxidation methods, "J. Phys. D.: Appl. Phys., Vol. 35, pp. 2415-2421, (2002).

The use of plasma oxidation to produce oxidized layers is discussed in Heejae Shim et al., "Magnetic tunnel junctions with a tunnel barrier formed by N2O plasma," Appl. Phys. Lett., Vol. 83, No. 22, pp. 4583-4585, 1 Dec. 2003.

U.S. Patent 6,331,944 to Monsma et al., "Magnetic Random Access Memory Using a Series Tunnel Element Select Mechanism," discloses an alumina tunneling barrier.

U.S. Patent Application Publication US 2002/0081753 A1 to Gates et al., "Formation of Arrays of Microelectronic Elements," teaches an alumina tunneling barrier.

Sincerely,

George O. Saile,
Reg. No. 19572

Form PTO-1449

INFORMATION DISCLOSURE CITATION IN AN APPLICATION

(Use several sheets if necessary)

OIPE JUL 06 2004 PATENT & TRADEMARK OFFICE TC1700

Docket Number (Optional)	Application Number
HT-03-016	10/820,391
Applicant: Cheng T. Horng et al.	
Filing Date: 04/08/04	Group Art Unit:

U.S. PATENT DOCUMENTS

Examiner Initial	Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate
	6703654	3/9/04	Horng et al.	257	295	2/20/03
	5644034	3/17/97	Gallagher et al.	365	171	3/18/96
	6331944	12/18/01	Monsma et al.	365	171	4/13/00

FOREIGN PATENT DOCUMENTS

	Document Number	Date	Country	Class	Subclass	Translation YES	Translation NO

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

- Y. Ando et al., "Growth mechanisms of thin insulating layer in ferromagnetic tunnel junctions prepared using various oxidation methods," J. Phys. D.: Appl. Phys. Vol. 35, pp. 2415-2421, 2002.
- "Magnetic tunnel junctions with a tunnel barrier formed by N_2O plasma," by Heejae Shim et al., Appl. Phys. Lett., Vol. 83, No. 22, pp. 4583-4585, 12/1/03.

EXAMINER	DATE CONSIDERED

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP § 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to the applicant.

Form PTO-1449

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OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

- Copending U.S. Patent Application HT-02-032 to Horng et al., "A Novel Oxidation Method to Fabricate Low Resistance TMR Read Head", Ser. # 10/768,917, filed 01/30/04.
- Co-pending U.S. Patent Application HT-03-006 to Horng et al., "Process and Structure to Fabricate Spin Valve Heads for Ultra-High Recording Density Application", Ser #10/661,038, filed 09/12/03.

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OIPE JC18 JUL 06 2004 PATENT & TRADEMARK OFFICE

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HT-03-016	10/820,391
Applicant Cheng T. Horng et al.	
Filing Date 04/08/04	**Group Art Unit**

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- Copending U.S. Patent App. HT-03-022 to Horng et al., "A Novel Structure/Method to Fabricate a High-Performance Magnetic Tunneling Junction MRAM", Ser. # 10/844,171, filed 05/12/04.
- Co-Pending U.S. Patent App. HT-03-025/031 to Horng et al., "A Novel Buffer (Seed) Layer for Making a High-Performance Magnetic Tunneling Junction MRAM", Ser. # 10/849,310, filed 05/19/04.

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–	U.S. Patent App. Pub. US 2002/0081753 A1 to Gates et al, Pub. Date 06/27/02, US Cl. 438/3, filed 02/25/02.

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